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FORT COLLINS, CO 80527-2400

EXAMINER

LAO, LUN S

ART UNIT	PAPER NUMBER
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2615

MAIL DATE	DELIVERY MODE
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10/04/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/059,096

Applicant(s)

WILCOCK ET AL.

Examiner

Lun-See Lao

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-68 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-68 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Introduction

1. This action is in response to the amendment filed on 07-20-2007. Claims 66-68 have been added. Claims 1-68 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5943427 to Massie et al. (hereafter as Massie) in view of USPN 6154549 to Arnold et al (hereafter as Arnold).

Regarding Claim 1, Massie discloses an audio user-interfacing method in which each of a plurality of items is represented in an audio field by plural synthesized sound sources from where sounds related to the item appear to emanate (Figs. 1B, 2-4, 9-10, and 13), the method comprising the steps of:

(a) determining, for each said sound source, an associated rendering position at which the sound source is to be synthesized to emit sounds in the audio field (Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18), the rendering positions associated with the sound sources being on at least a portion of a three-dimensional audio space/environment (fig. 2, col. 4, lines 3-46);

(b) generating, using plural audio output devices, an audio field in which said sound sources are synthesized at their associated rendering positions to provide sounds related to the items concerned (Figs. 1B, 2-4, 9-10, and 13; column 4, line 1 to column 5, lines 56), the audio out devices being actually or notionally located inside the three-dimensional audio space/environment (fig. 2, col. 4, lines 3-46).

Massie does not disclose the rendering positions associated with the sound sources is on at least a portion of cylindrical locus points. In other words, Massie does not disclose that the three-dimensional audio space/environment is defined in cylindrical coordinates. It is noted that Massie discloses that the three-dimensional audio space/environment can be fined in spherical or rectangular coordinates. Col. 4, lines 35-37.

Arnold discloses an audio user-interfacing system/method, including a three-dimensional audio space/environment. In particular, Arnold discloses that, in addition to be defined in spherical and rectangular coordinates (fig.s 17 and 15, respectively), the three-dimensional audio space/environment can also be defined in cylindrical coordinates (fig. 16). Col. 25, line 65 – col. 26, line 67.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include into Massie cylindrical coordinates to define the three-dimensional audio space/environment of Massie. In so doing, the system of Massie would have provided the user with desired spatial environments having great realism or even surrealism in the production of sounds (Arnold, column 11, lines 41-54).

When the teachings of Massie and Arnold are combined, it would have been obvious that the rendering positions associated with the sound sources is on at least a portion of cylindrical locus points.

Regarding Claim 2, Massie as modified discloses displacing the audio field in a direction parallel to the longitudinal axis of said cylindrical locus of points whereby to change the portion of the field closest to a reference position where a user of the audio output devices is actually or notionally located (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 3, Massie as modified discloses rotating the audio field about the longitudinal axis of said at cylindrical locus of points (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 4, Massie as modified discloses the audio field is displaced in said direction in discrete steps of predetermined magnitude (Arnold, Figs. 14-16; • Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 5, Massie as modified discloses the longitudinal axis of said at least cylindrical locus of points is vertically disposed, the sound sources being located at differing levels corresponding to floors of a building, the predetermined magnitude of said discrete steps corresponding to moving up or down one floor (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 6, Massie as modified discloses the sound sources are arranged in groups with the sound sources in each group being at the same position along axis and the groups being separated one from another along said axis by distances corresponding to multiples, including one, of said predetermined magnitude (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 7, Massie as modified does not expressly disclose sound sources located in the audio field outside of a focus zone fixed relative to said reference position, are at least partially muted relative to sound sources inside the focus zone; the sound sources being un-muted and muted as the sound sources move into and out of the focus zone in response to displacement of the audio field in said direction parallel to the axis of the cylindrical locus of points.

Arnold discloses an inner range and an outer range between the user and the perceived location of a sound source. If a location is specified at which the sound source is to be perceived that is closer than the inner range, the sound may be produced according to the adjustment parameters corresponding to a location no closer than the inner range. If a location is specified at which the sound source is to be perceived that is farther than the outer range, the sound may be produced according to parameters corresponding to a location no farther than the outer range, the sound may be muted, or production of the sound may be avoided in order to provide great realism or even surrealism in the production of sounds.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Massie as modified with the teaching of Arnold to provide an inner range and an outer range between the user and the perceived location of a sound source. If a location is specified at which the sound source is to be perceived that is closer than the inner range, the sound may be produced according to the adjustment parameters corresponding to a location no closer than the inner range. If a location is specified at which the sound source is to be perceived that is farther than the outer range, the sound may be produced according to parameters corresponding to a location no farther than the outer range, the sound may be muted, or production of the sound may be avoided in order to provide great realism or even surrealism in the production of sounds (Arnold, Figs. 14-16; column 31, line 44 to column 32, line 9; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 8, Massie as modified discloses sound sources adjacent to, but outside of, the focus zone are partially muted whilst those farther from the focus zone are fully muted (Arnold, Figs. 14-16; column 31, line 44 to column 32, line 9; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 9, Massie as modified discloses sound sources outside of the focus zone are fully muted, an audio indication of the sound sources existing beyond the focus zone in at least one direction being un-muted in the audio field (Arnold, Figs. 14-16; column 31, line 44 to column 32, line 9; Massie, Figs. 1B, 2-4, 9-10, and 13; ° column 4, lines 1-52; column 5, line 1 to column 6, line 18).

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Regarding Claim 10, Massie as modified discloses the audio field is stabilized relative to one of: a user's head; a user's body; a vehicle in which the user is traveling; the world; this stabilization taking account of whether the audio output devices are world, vehicle, body or head mounted, and, as appropriate, rotation of the user's head or body, or of the vehicle, about an axis parallel to the longitudinal axis of the cylindrical locus of points (Arnold, Figs. 14-16; column 31, line 44 to column 32, line 9; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 11, Massie as modified discloses sound sources are synthesized to lie at different radial distances from the longitudinal axis of said cylindrical locus of points (Arnold, Figs. 14-16; column 31, line 44 to column 32, line 9; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18)).

Regarding Claim 12, Massie as modified discloses the longitudinal axis of said cylindrical locus of points is vertically disposed (Arnold, Figs. 14-16; column 31, line 44 to column 32, line 9; Massie, Figs. 1 B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 13, Massie as modified discloses the longitudinal axis of said cylindrical locus of points is horizontally disposed (Arnold, Figs. 14-16; column 31, line 44 to column 32, line 9; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 14, Massie as modified discloses at least some of the said items represented by the sound sources are audio labels for services, the method

further including selecting a service by selecting the corresponding audio-label sound source (Arnold, Figs. 14-16; column 31, line 44 to column 32, line 9; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Claim 15 is essentially similar to Claim 1 and is rejected for the reasons stated above apropos to Claim 1 (Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Claim 16 is essentially similar to Claim 4 and is rejected for the reasons stated above apropos to Claim 4.

Claim 17 is essentially similar to Claim 5 and is rejected for the reasons stated above apropos to Claim 5.

Claim 18 is essentially similar to Claim 6 and is rejected for the reasons stated above apropos to Claim 6.

Regarding 19, Massie as modified does not expressly disclose sound sources located in the audio field outside of a focus zone fixed relative to a notional user position, are at least partially muted relative to sound sources inside the focus zone; the sound sources being un-muted and muted as the sound sources move into and out of the focus zone in response to displacement of the audio field in said direction parallel to the longitudinal axis of at least a portion of a cylindrical locus of points Arnold discloses an inner range and an outer range between the user and the perceived location of a sound source. If a location is specified at which the sound source is to be perceived that is closer than the inner range, the sound may be produced according to the adjustment parameters corresponding to a location no closer than the inner range. If a location is

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specified at which the sound source is to be perceived that is farther than the outer range, the sound may be produced according to parameters corresponding to a location no farther than the outer range, the sound may be muted, or production of the sound may be avoided in order to provide great realism or even surrealism in the production of sounds.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Massie as modified with the teaching of Arnold to provide an inner range and an outer range between the user and the perceived location of a sound source. If a location is specified at which the sound source is to be perceived that is closer than the inner range, the sound may be produced according to the adjustment parameters corresponding to a location no closer than the inner range. If a location is specified at which the sound source is to be perceived that is farther than the outer range, the sound may be produced according to parameters corresponding to a location no farther than the outer range, the sound may be muted, or production of the sound may be avoided in order to provide great realism or even surrealism in the production of sounds (Arnold, Figs. 14-16; column 31, line 44 to column 32, line 9; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, -line 18).

Claim 20 is essentially similar to Claim 8 and is rejected for the reasons stated above apropos to Claim 8.

Regarding Claim 21, Massie as modified discloses sound sources outside of the focus zone are fully muted, an audio indication of the sound sources existing beyond

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the focus zone in at least one direction along said axis being un-muted in the audio field (Arnold, Figs. 14-16; column 31, line 44 to column 32, line 9; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Claim 22 is essentially similar to Claim 10 and is rejected for the reasons stated above apropos to Claim 10.

Regarding Claim 23, Massie as modified discloses the sound sources are distributed over at least a portion of a cylindrical locus of points (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 24, Massie as modified discloses the sound sources are distributed in three dimensions in terms of a cylindrical coordinate system referenced to said axis (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52 column 5, line 1 to column 6, line 18).

Regarding Claim 25, Massie as modified discloses said axis is vertically disposed (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 26, Massie as modified discloses said axis is horizontally disposed (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52 column 5, line 1 to column 6, line 18).

Claim 27 is essentially similar to Claim 14 and is rejected for the reasons stated above apropos to Claim 14.

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Claim 28 is essentially similar to Claim 1 and is rejected for the reasons stated above apropos to Claim 1 (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 29, Massie as modified discloses the processor arrangement is arranged for: (a) setting the location of each said sound source relative to an audio-field reference (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18); (b) controlling an offset between the audio-field reference and a presentation reference determined by the location of the audio output devices (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18), the processor arrangement including a user input arrangement and being operative to enable a user to set a displacement of the audio field relative to the presentation reference in a direction parallel to the longitudinal axis of said cylindrical locus of points (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18); and (c) deriving the rendering position of each sound source based on the location of the sound source in the audio field and said offset (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 30, Massie as modified discloses the processor arrangement is further operative to enable a user to set a rotation of the audio field about the longitudinal axis of said cylindrical locus of points (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 31, Massie as modified discloses the processor arrangement is arranged to permit the audio field to be displaced in said direction only in discrete steps of predetermined magnitude (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Claim 32 is essentially similar to Claim 7 and is rejected for the reasons stated above apropos to Claim 7.

Claim 33 is essentially similar to Claim 8 and is rejected for the reasons stated above apropos to Claim 8.

Claim 34 is essentially similar to Claim 9 and is rejected for the reasons stated above apropos to Claim 9.

Regarding Claim 35, Massie as modified discloses at least some of the said items represented by the sound sources are audio labels for services, the apparatus including a selection arrangement for selecting a service by selecting the corresponding audio-label sound source (Arnold, Figs. 14-16; Massie, Figs. 1B 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 36, Massie as modified discloses the processor arrangement is arranged for varying the said offset such as to stabilize the audio field reference relative to one of: a user's head; a user's body; a vehicle mounting the apparatus; the world (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Claim 37 is essentially similar to Claim 1 and is rejected for the reasons stated above apropos to Claim 1.

Regarding Claim 38, Massie as modified discloses the processor arrangement is such that the offset is arranged to permit the audio field to be displaced in said direction only in discrete steps of predetermined magnitude (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Claim 39 is essentially similar to Claim 7 and is rejected for the reasons stated above apropos to Claim 7.

Claim 40 is essentially similar to Claim 8 and is rejected for the reasons stated above apropos to Claim 8.

Claim 41 is essentially similar to Claim 9 and is rejected for the reasons stated above apropos to Claim 9.

Regarding Claim 42, Massie as modified discloses the processor arrangement is arranged so that the rendering-position determination is so as to cause said sound sources to be on an at least a portion of a cylindrical locus of points (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 43, Massie as modified discloses the processor arrangement is arranged so that the rendering-position determination is so as to cause the sound sources to be distributed in three dimensions in terms of a cylindrical coordinate system referenced to said axis (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 44, Massie as modified discloses at least some of the said items represented by the sound sources are audio labels for services, the apparatus

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including a selection arrangement for selecting a service by selecting the corresponding audio-label sound source (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 45, Massie as modified discloses the processor arrangement is arranged for varying the said offset such as to stabilize the audio field reference relative to one of: a user's head; a user's body; a vehicle mounting the apparatus; the world (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Claim 46 is essentially similar to Claim 1 and is rejected for the reasons stated above apropos to Claim 1.

Claim 47 is essentially similar to Claims 28- 29 and is rejected for the reasons stated above apropos to Claims 28- 29.

Regarding Claim 48, Massie as modified discloses the control arrangement is further operative to enable a user to set a rotation of the audio field about the axis of said cylindrical locus of points (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 49, Massie as modified discloses the control arrangement is arranged to permit the audio field to be displaced in said direction only in discrete steps of predetermined magnitude (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Claim 50 is essentially similar to Claim 7 and is rejected for the reasons stated above apropos to Claim 7.

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Claim 51 is essentially similar to Claim 8 and is rejected for the reasons stated above apropos to Claim 8.

Claim 52 is essentially similar to Claim 9 and is rejected for the reasons stated above apropos to Claim 9.

Regarding Claim 53, Massie as modified discloses at least some of the said items represented by the sound sources are audio labels for services, the apparatus including a selection arrangement for selecting a service by selecting the corresponding audio-label sound source (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 54, Massie as modified discloses the control arrangement for controlling the offset is arranged for varying the offset such as to stabilize the audio field reference relative to one of: a user's head; a user's body; a vehicle mounting the apparatus; the world (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Claim 55 is essentially similar to Claim 1 and is rejected for the reasons stated above apropos to Claim 1.

Regarding Claim 56, Massie as modified discloses the control arrangement is operative to permit the audio field to be displaced in said direction only in discrete steps of predetermined magnitude (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Claim 57 is essentially similar to Claim 7 and is rejected for the reasons stated above apropos to Claim 7.

Claim 58 is essentially similar to Claim 8 and is rejected for the reasons stated above apropos to Claim 8.

Claim 59 is essentially similar to Claim 9 and is rejected for the reasons stated above apropos to Claim 9.

Regarding Claim 60, Massie as modified discloses the rendering-position determining arrangement is operative to cause said sound sources to on at least a portion of a cylindrical locus of points (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 61, Massie as modified discloses the rendering-position determining arrangement is operative to cause the sound sources to be distributed in three dimensions in terms of a cylindrical coordinate system referenced to said axis (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 62, Massie as modified discloses at least some of the said items represented by the sound sources are audio labels for services, the apparatus including a selection arrangement for selecting a service by selecting the corresponding audio-label sound source (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 63, Massie as modified discloses the control arrangement is arranged for varying the said offset such as to stabilize the audio field reference relative to one of: a user's head; a user's body; a vehicle mounting the apparatus; the world

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(Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18).

Regarding Claim 64, Massie as modified the audio output devices are stereo headphones on the head of a user (Arnold, Figs. 14-16; Massie, Figs. 1B, 2-4, 9-10, and 13; column 4, lines 1-52; column 5, line 1 to column 6, line 18)

Claim 65 is essentially similar to Claim 64 and is rejected for the reasons stated above apropos to Claim 64.

Regarding claim 66 Arnold teaches that the rendering position associated with each of the sound sources is on at least a portion of a cylindrical locus of points (Figs. 14-17, column 1, lines 25-33; column 11, lines 41-54 and column 25 line 30-column 27 line 25 and discussion above claims 1 and 15)

Claim 67 is essentially similar to Claim 66 and is rejected for the reasons stated above apropos to Claim 66.

Claim 68 is essentially similar to Claim 66 and is rejected for the reasons stated above apropos to Claim 66.

Response to Arguments

4. Applicant's arguments filed 07-20-2007 have been fully considered but they are not persuasive.

Applicant argued in substance that Arnold does not disclose the features of rendering positions associated with the sound sources being on at least a portion of a cylindrical locus of points. Remarks, pages 24-25.

The examiner respectively disagrees. As discussed in the rejection of claim 1, Massie does not disclose the rendering positions associated with the sound sources is on at least a portion of cylindrical locus points. In other words, Massie does not disclose that the three-dimensional audio space/environment is defined in cylindrical coordinates, while Massie discloses that the three-dimensional audio space/environment can be defined in spherical or rectangular coordinates. Col. 4, lines 35-37.

However, Arnold discloses an audio user-interfacing system/method, including a three-dimensional audio space/environment. In particular, Arnold discloses that, in addition to be defined in spherical and rectangular coordinates (fig.s 17 and 15, respectively), the three-dimensional audio space/environment can also be defined in cylindrical coordinates (fig. 16). Col. 25, line 65 – col. 26, line 67.

Therefore, it would be obvious to one of ordinary skill in the art to include into Massie a cylindrical coordinate system to define the three-dimensional audio space/environment of Massie. When the teachings of Massie and Arnold are combined, it would be obvious that the rendering positions associated with the sound sources is on at least a portion of cylindrical locus points.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tucker (US PAT. 5,742,689) is cited to show other related audio user interface with cylindrical audio field organization.

7. Any response to this action should be mailed to:

Mail Stop ____ (explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Facsimile responses should be faxed to:

(571) 273-8300

Hand-delivered responses should be brought to:

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao, Lun-See whose telephone number is (571) 272-7501. The examiner can normally be reached on Monday-Friday from 8:00 to 5:30.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao, Lun-See
Patent Examiner
US Patent and Trademark Office
Knox
571-272-7501

Date 09-28-2007



VIVIAN CHIN
SUPERVISOR PATENT EXAMINER
TECHNOLOGY CENTER 2600